

WHAT IS CLAIMED IS:

1. A housing for mounting a wire grid polarizing beamsplitter and a spatial light modulator in alignment with an output optical path, comprising:

(a) a front plate having an opening for admitting incident illumination provided along an illumination axis;

(b) a modulator mounting plate, spaced apart from and parallel to said front plate, for mounting said spatial light modulator in said optical output path of said illumination axis;

(c) first and second polarizer support plates, spaced apart from each other and extending between said front plate and said modulator mounting plate;

said respective facing inner surfaces of said first and second support plates providing coplanar support features for supporting said wire grid polarizing beamsplitter between said inner surfaces; and

said wire grid polarizing beamsplitter being extended between and normal to said facing inner surfaces, said surface of the wire grid polarizing beamsplitter at a fixed angle with respect to said surface of said spatial light modulator on said modulator mounting plate, said fixed angle defining an output optical axis along said output optical path.

2. A housing according to claim 1 wherein said first and second polarizer support plates further provide a pair of coplanar first and second edge support elements for registering an edge of the wire grid polarizing beamsplitter.

3. A housing according to claim 1 wherein said first polarizer support plate further comprises a first analyzer seating feature for supporting a surface of an analyzer and aligning an edge of said analyzer;

said first analyzer seating feature coplanar with a corresponding second analyzer seating feature on said second polarizer support plate; and

said first and second polarizer support plates thereby providing support for an analyzer extended between said first and second polarizer support plates in the output optical path.

4. A housing according to claim 1 wherein said support plates providing adequate venting for ambient or forced air flow across the polarization and modulation components.

5. A housing according to claim 1 wherein said spatial light modulator is a reflective liquid crystal spatial light modulator.

6. A housing according to claim 1 wherein said front plate further comprises a recess for housing a prepolarizer.

7. A housing according to claim 1 wherein said opening in said front plate is a ring bore.

8. A housing according to claim 1 wherein said fixed angle of the surface of the wire grid polarizing beamsplitter with respect to the surface of the spatial light modulator on said modulator mounting plate is a diagonal.

9. A housing according to claim 1 wherein said coplanar support features are selected from the group consisting of machined surfaces and locating pins.

10. A housing according to claim 3 wherein said analyzer comprises a wire grid polarizing component.

11. A housing according to claim 3 wherein said analyzer comprises a polymer-based polarizer.

12. A housing for mounting a wire grid polarizing beamsplitter and a spatial light modulator in alignment with an output optical path, comprising:

(a) a front plate having an opening for admitting incident illumination provided along an illumination axis through a prepolarizer component;

(b) a modulator mounting plate, spaced apart from and parallel to said front plate; for mounting the spatial light modulator in the path of said illumination axis;

(c) first and second polarizer support plates, spaced apart from each other and extending between said front plate and said modulator mounting plate;

said respective facing inner surfaces of said first and second support plates providing coplanar support features for supporting the wire grid polarizing beamsplitter extended between said inner surfaces;

wherein said first and second polarizer support plates further provide a pair of coplanar first and second edge support elements for registering an edge of the wire grid polarizing beamsplitter;

said first and second polarizer support plates further comprising coplanar support features for mounting an analyzer in the output optical path; and

said wire grid polarizing beamsplitter being extended between and normal to said facing inner surfaces, the surface of the wire grid polarizing beamsplitter at a fixed angle with respect to the surface of the spatial light modulator on said modulator mounting plate, said fixed angle defining an output optical axis along the output optical path.

13. A housing according to claim 12 wherein said spatial light modulator is a reflective liquid crystal spatial light modulator.

14. A housing according to claim 12 wherein said opening in said front plate is a ring bore.

15. A housing according to claim 12 wherein said fixed angle of the surface of the wire grid polarizing beamsplitter with respect to the surface of the spatial light modulator on said modulator mounting plate is a diagonal.

16. A housing according to claim 12 wherein said coplanar support features are selected from the group consisting of machined surfaces and locating pins.

17. A housing according to claim 12 wherein said analyzer comprises a wire grid polarizing component.

18. A housing according to claim 12 wherein said prepolarizer component comprises a wire grid polarizing component.

19. A housing according to claim 12 wherein said prepolarizer component comprises a polymer-based polarizer.

20. A housing for mounting a wire grid polarizing beamsplitter and a spatial light modulator in alignment with an output optical path, comprising:

(a) a front plate having an opening for admitting incident illumination provided along an illumination axis;

(b) modulator mounting means for mounting the spatial light modulator in the path of said illumination axis;

(c) first and second polarizer support plates, spaced apart from each other and extending from said front plate;

said respective facing inner surfaces of said first and second support plates providing coplanar support features for supporting the wire grid polarizing beamsplitter between said inner surfaces; and

said wire grid polarizing beamsplitter being extended between and normal to said facing inner surfaces, the surface of the wire grid polarizing beamsplitter at a fixed angle with respect to the surface of the spatial

light modulator, said fixed angle defining, by reflection of light from the spatial light modulator, an output optical axis along the output optical path.

21. A method for mounting a wire grid polarizing beamsplitter and a spatial light modulator in alignment with an output optical path, comprising:

- (a) directing incident illumination along an illumination axis;
- (b) mounting the spatial light modulator in the path of said illumination axis;
- (c) extending the wire grid polarizing beamsplitter between spaced apart first and second polarizer support plates, wherein
 - (i) the respective facing inner surfaces of said first and second support plates provide coplanar support features for supporting a wire grid polarizing beamsplitter extended between said facing inner surfaces;
 - (ii) the inner surface of said first polarizer support plate defines a first edge datum for registering a first edge of said wire grid polarizing beamsplitter and defines a first point of a second edge datum for registering a second edge of said wire grid polarizing beamsplitter, wherein said second edge is adjacent and perpendicular to said first edge, said second edge extending between said first and second polarizer support plates;
 - (iii) the inner surface of said second polarizer support plate defines a second point of said second edge datum;and

said wire grid polarizing beamsplitter thereby supported at a normal to said inner surfaces, the surface of said wire grid polarizing beamsplitter at a fixed angle with respect to the surface of the spatial light modulator, said fixed angle defining an output optical axis along the output optical path.

22. A method for mounting according to claim 21 wherein the step of extending the wire grid polarizing beamsplitter between said first and second polarizer support plates further comprises the step of applying a flexible adhesive at a point of contact of the wire grid polarizing beamsplitter against the inner surface of said second polarizer support plate.

23. A method for mounting according to claim 21 further comprising the step of extending an analyzer between coplanar support features on said first and second support plates.

24. A method for mounting according to claim 21 further comprising the step of adjusting the position of the spatial light modulator for alignment of said output optical axis.

25. A method for mounting according to claim 21 wherein the step of mounting the spatial light modulator comprises the step of attaching the spatial light modulator to a mounting plate, said mounting plate being attached to said first and second polarizer support plates.

26. A method for mounting according to claim 21 wherein said fixed angle is a diagonal.